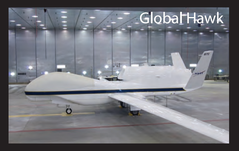
NASA Airborne Science Capabilities for Decadal Survey Mission Support

Role: Remote sensing, Upper Tropospheric and Stratospheric *In situ* sampling

Altitude: 70,000 ft
Payload: 2,900 lbs
Range: 5,000 + Nmi
Based: NASA DFRC



Role: Long duration high-altitude remote sensing; upper Tropospheric and Stratospheric in situ sampling; UAVSAR

Altitude: 65,000 ft
Payload: 3,000 lbs
Range: 3,500 Nmi
Based: NASA DFRC

Role: Remote sensing, Upper Tropospheric and Stratospheric *In situ* sampling, vertical profiling

Altitude: 65,000 ft
Payload: 6,000 lbs
Range: 2,172 Nmi
Based: NASA JSC

Role: UAVSAR and mid-altitude remote sensing

Altitude: 45,000 ft
Payload: 2,610 lbs
Range: 3,400 Nmi
Based: NASA DFRC

Role: Long duration mid-altitude remote sensing and in situ sampling; real-time disaster response imaging

Altitude: 45,000 ft
Payload: 3,000 lbs
Range: 3,500 Nmi
Based: NASA DFRC

Role: Tropospheric *In situ* sampling, vertical profiles, Synthetic Aperture Radar, remote sensing

Altitude: 41,000 ft
Payload: 30,000 lbs
Range: 5,400 Nmi
Based: NASA DFRC / UND

Role: Mid-altitude remote sensing and In situ sampling

Altitude: 40,000 ft
Payload: 12,000 lbs
Range: 2,300 Nmi
Based: NASA-GRC

Role: Mid-altitude remote sensing and In situ sampling

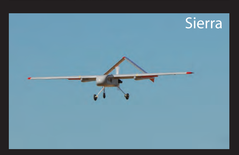
Altitude: 32,000 ft.
Payload: 2,000 lbs
Range: 1,883 Nmi
Based: GSFC-WFF

Role: Remote sensing, Laser profiling, Tropospheric *In situ* sampling

Altitude: 30,000 ft.
Payload: 16,000 lbs
Range: 3,800 Nmi
Based: NASA Wallops

Role: Low-altitude remote sensing and In situ sampling

Altitude: 25,000 ft
Payload: 5,000 lbs
Range: 500 Nmi
Based: Various

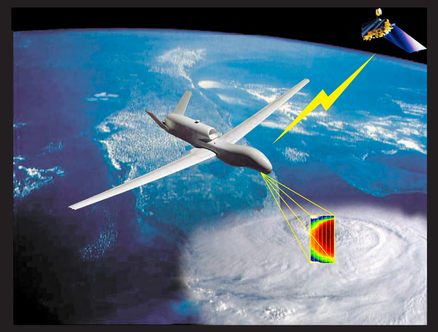


Role: Low altitude remote sensing and in situ sampling

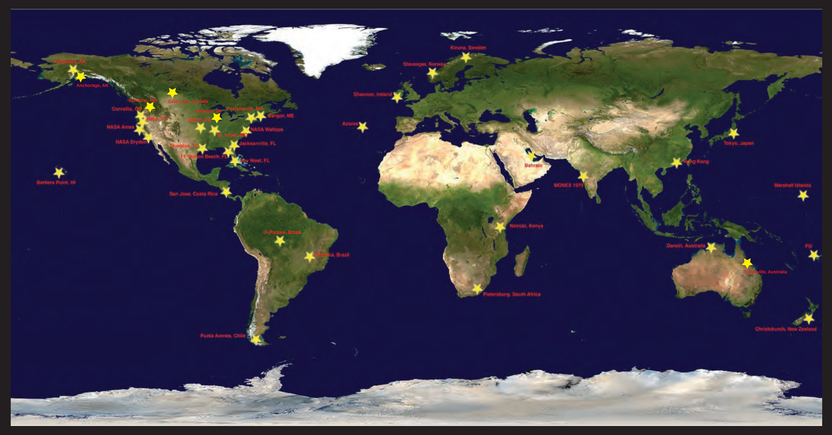
Altitude: 12,000 ft
Payload: 100 lbs
Range: 550 Nmi
Based: NASA ARC

Abstract

The Airborne Science Program is a key component of NASA's integrated Earth Observing capability. Its primary function is to provide airborne observational assets to augment space-based systems, and to provide targeted characterizations of regional or localized phenomena at high spatial and temporal resolutions.



The program maintains a catalog of platforms for testing future orbital sensor technologies, and the validation of on-orbit satellite measurements and their science algorithms. It is also investigating the use of UASs (including a Global Hawk to become available in 2009), autonomous sensor systems, and integrated sensor webs for Earth science research. Airborne satellite communication systems for real-time interactive science experiments are also being implemented on selected platforms.



Past Deployment Sites Used by the Airborne Science Program Platforms

Contact Information

http://airbornescience.nasa.gov

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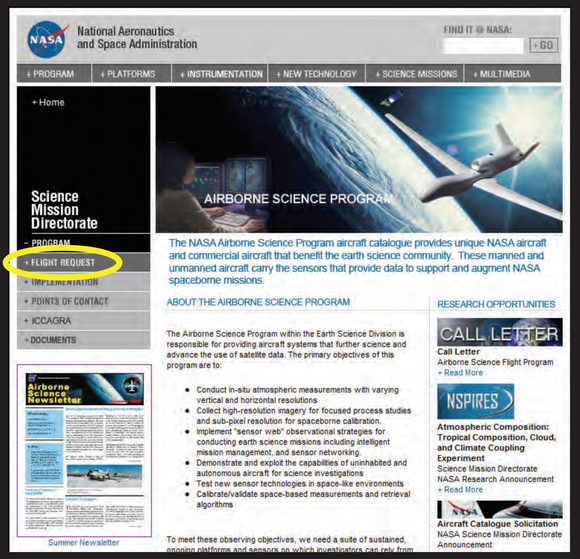
The Flight Request Process

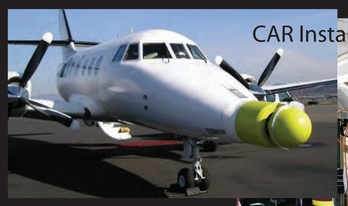
Requests for the use of the catalog aircraft (both government and commercial) are submitted via the web tool at http://airbornescience.nasa.gov (new users first complete a quick registration step.) Details regarding platform and schedule requirements, together with a short science rationale and funding sponsorship, are entered. In many cases NASA-subsidized flight hour rates are made available to qualified researchers. Upon evaluation of the request, costs estimates are provided, and final approvals are obtained from Earth Science Division management.

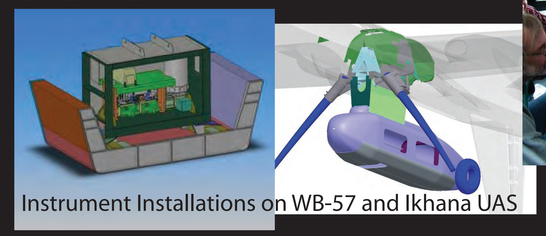
It should be noted that any arrangements to fly NASA equipment and/or personnel, regardless of the process, are required to comply with agency airworthiness and flight safety regulations (ref. NPD 7900.4b)



Instrument Integration Support

Both the individual aircraft programs at each NASA center, and the Airborne Science and Technology Laboratory (ASTL) at Ames, provide engineering consultation and support services to facilitate the installation of new instrumentation onto the various platforms. This includes assistance with mechanical and electrical interfaces, and compliance with NASA airworthiness directives. New instrument development projects intending to fly on NASA airborne platforms are strongly encouraged to consult with ASP engineers early in the design process to streamline the integration process.

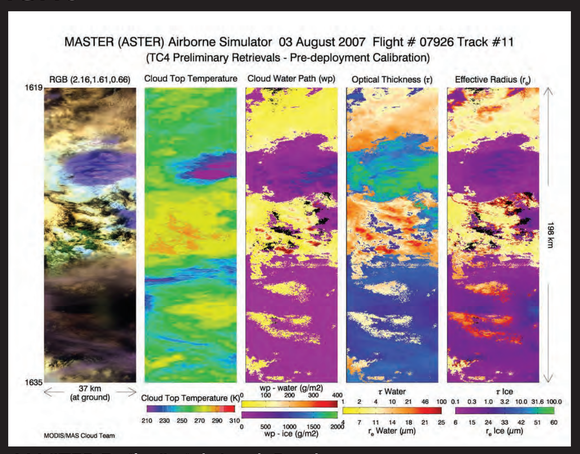




Instrument Installations on WB-57 and Ikhana UAS

Facility Sensors and Support Equipment

The Airborne Science Program, together with the Earth Science Division, maintains a number of community-use assets to support approved research projects. These include calibrated imagers such as the JPL AVIRIS (Airborne Visible and Infrared Imaging Spectrometer,) and the MODIS and ASTER Airborne Simulators (MAS and MASTER,) together with a variety of digital cameras and video tracking systems. Precision platform navigation and aircraft state data are provided to payloads via either embedded or stand-alone systems. Several two-way satellite communication systems are also becoming available. For more information on these systems see the Instrumentation page on the ASP web site.



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